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(54) Apparatus for destroying material in sheet form

(57) The housing for an apparatus for destroying material in sheet form (document disposal unit) possesses a feed bar 5 having a swinging flap 3 which makes it possible to feed material for cutting vertically and horizontally to a cutting mechanism. Moreover due to the shaping of the housing it is possible to throw waste which is not to be shredded into a waste paper basket 9 beneath the apparatus, in a horizontal or vertical direction. Cutting mechanism 7 can be switched on by press button or light barrier 13. The mechanism can be reversed on occurrence of overloading.

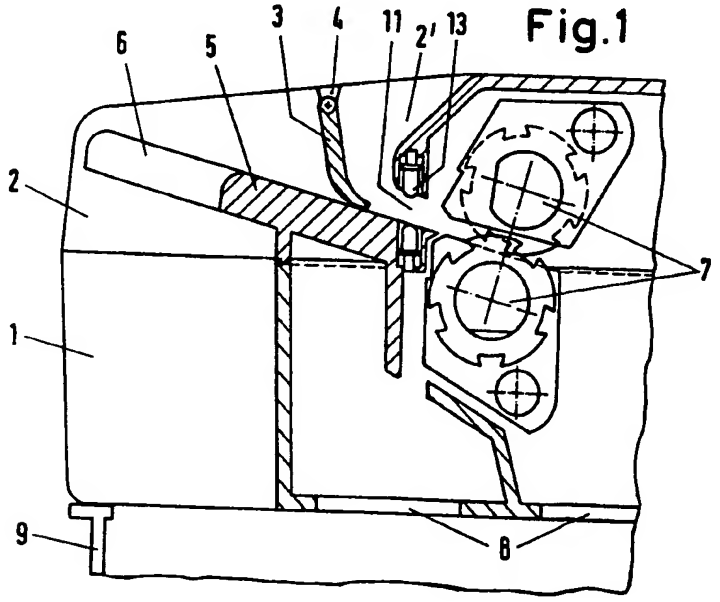

Fig.1

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The drawing(s) originally filed was/were informal and the print here reproduced is taken from a later filed formal copy.

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Fig.1

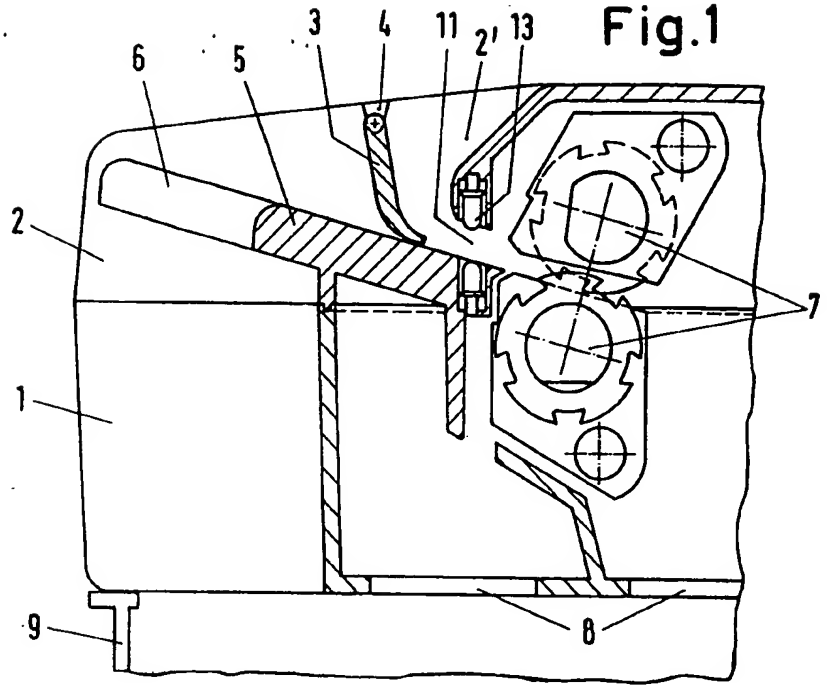


Fig.2

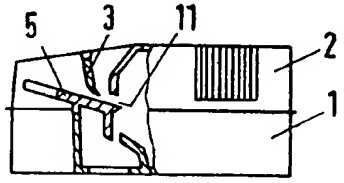


Fig.3

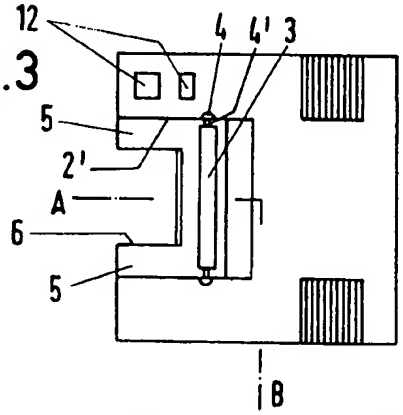
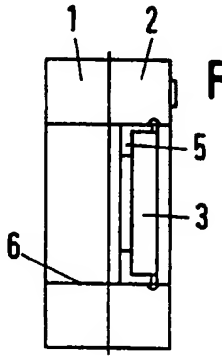


Fig.4



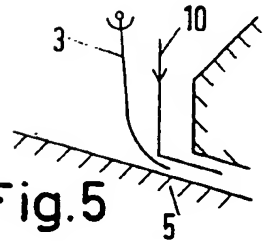


Fig.5

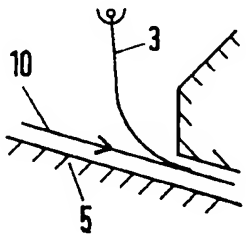


Fig.6

SPECIFICATION

Apparatus for destroying material in sheet form

The invention relates to an apparatus for reducing material of sheet form to shreds or shavings.

What are called document disposal units are known, for example from Fed. German Publ. Sp. 22 09 431, Fig. 1, which have a vertical sheet intake direction. The material to be shredded is guided from above vertically into the feed slot. This arrangement is favourable only as long as the disposal unit, which mostly stands on an under-structure formed as waste paper basket, is lower than for example desk level. It is here disadvantageous that the pertinent waste paper basket, due to the low overall height, has a relatively small capacity. If the document disposal unit should be integrated into the desk or positioned at table height, the vertical sheet intake direction is inconvenient. The same also applies to waste which does not pass through the cutting mechanism of the document disposal unit but is thrown immediately into the waste paper basket.

A further disadvantage of this arrangement consists in that cut material which is emitted again due to reverse running of the cutting mechanism does not drop into the waste paper basket but over the outer sides of the housing on to the floor. Reversing becomes effective if the cutting mechanism is stopped due to over-loading and in reverse emits the half shredded material through the feed slot.

The invention is based upon the problem of producing an apparatus after the style of a document disposal unit which renders possible vertical and horizontal sheet feed to the cutting mechanism.

The apparatus according to the invention has a feed table (feed rail) inclined preferably at about 15° to the horizontal and mounted before the feed slot of its cutting mechanism, and above this a pivotable swinging flap extending especially over the whole width of the feed table, which is of concave curvature on its surface towards the cutting mechanism. Due to this shaping of the swinging flap it is ensured that documents fed perpendicularly are deflected almost through a right angle and pass in this position into the feed slot of the cutting mechanism. If the document is inserted approximately horizontally along the feed table, the swinging flap deviates upwards and lateral feed to the cutting mechanism is possible.

Further development of the invention is described in the Sub-Claims.

The U-shaped configuration of the feed table at the end remote from the cutting mechanism and the U-shaped configuration of the housing under the feed table are particularly advantageous. This renders it possible for waste which is not to be shredded to be thrown either horizontally or vertically directly into the container arranged beneath the housing of the cutting mechanism. Furthermore this renders it possible for cut material which is emitted by the cutting mechanism again by reversing to be dropped without problem into the waste paper basket fitted beneath the document disposal unit.

The invention will be explained in greater detail below by reference to an example of embodiment and the drawing, wherein:–

Figure 1 shows a section through the middle of the region of the housing of a document disposal unit essential for the feed of material for cutting, seen along a line A–B in Fig. 3;

Figure 2 shows a partially broken away side view of the housing;

Figure 3 shows a plan view of the housing;

Figure 4 shows a front view of the housing and

Figures 5 and *6* show the vertical and horizontal feed of material for cutting.

The housing of the document disposal unit consists of an upper part 2 and lower part 1 of shell form usually standing on an understructure 9 of waste paper basket form.

In Fig. 1 the part of the housing in which the gearing and drive are accommodated is not shown. The upper and lower parts 2, 1 contain a cutting mechanism 7 and are closed except for ventilation slots in the region of gearing and drive, so that hands cannot be inserted. For the supply of material for cutting in the upper part 2 a feed table or feed bar 5 is provided. The feed bar 5 is inclined at about 15° to the horizontal and opens into a feed slot 11. Before the feed slot 11 the feed bar 5 forms a closed support surface for material to be fed to the cutting mechanism 4. In the region of the material feed the upper part 2 and also the lower part 1 have a U-shaped cutaway portion 6. The cutaway portion 6 in the upper part 2 by the feed bar 5 is somewhat smaller in width and depth so that the feed bar 5 receives lateral support surfaces for the material for cutting. By way of the cutaway portion 6 material which is not to be shredded can be thrown either horizontally or vertically directly into the under-structure 9 of waste paper basket 4.

The support surface of the feed bar 5 is limited on both sides by side walls 2' into which there are formed two spherical bearing recesses 4 at the upper end of the side walls 2'. Complementary bearing projections 4' on the upper end of a swinging flap 3 snap into the bearing recesses 4. The snap engagement can be released again without tools. The swinging flap 3 is mounted pivotably and rests with its lower curved end by gravity on the feed bar 5. A vertically inserted paper 10 is bent through about 90°, as Fig. 5 shows, by the concave form of the swinging flap 3,

seen from the entry slot 11, and the paper is fed through the feed slot 11 to the cutting mechanism 7. A horizontally inserted sheet of paper 10 lifts the swinging flap 3 and slides into the feed slot 11, as shown by Fig. 6. Several openings 8 in the underpart 1 of the housing transfer the shredded waste down into the collecting container or waste paper basket. The upper part 2 contains on the left beside the feed bar 5 two press buttons 12 for controlling the forward and reverse running of the cutting mechanism 7. The cutting mechanism 7 is also switched on by a light barrier 13 in the feed slot 11. If paper builds up and the cutting mechanism 7 is overloaded the possibility exists of emptying the cutting mechanism 7 by switching on the cutting mechanism reverse. The partially shredded documents then fall back on to the feed bar 5 and can drop through the U-shaped cutaway portion in the feed bar 5 at the user end into the paper basket 9. The side walls limiting the feed bar 5 prevents the cut material from then dropping beside the waste paper basket 9.

CLAIMS

1. Apparatus for destroying material in sheet form into shreds or shavings, having a cutting mechanism (7), having a housing (1, 2) surrounding the cutting mechanism (7) which housing comprises a feed slot (11), by way of which the material in sheet form can be fed to the cutting mechanism (7), and a feed table (5) mounted before the feed slot, and having a container (9) arranged beneath the housing (1, 2) to receive the shredded material, characterised in that above the feed table (5) there is arranged a swinging flap (3) hanging down pivotably to the feed table (5), which flap is of concave curvature on its face facing the feed slot (11).

2. Apparatus according to Claim 1, characterised in that the feed table (5) is inclined in relation to the horizontal plane, preferably by about 15°.

3. Apparatus according to Claim 1 or 2, characterised in that the housing (1, 2) comprises a cutaway portion (6) enclosed in U-form by the housing (1, 2) beneath the feed table (5) on the side remote from the feed slot (11), above the container (9).

4. Apparatus according to Claim 3, characterised in that the U-shaped cutaway portion (6) reaches through the feed table (5).

5. Apparatus according to one of Claims 1 to 4, characterised in that the swinging flap (3) extends over the entire width of the feed table (5).

6. Apparatus according to Claim 5, characterised in that limiting walls (2') protrude upwards beside the feed table (5) and in that the swinging flap (3) is mounted positively on the limiting walls (2') by means of axial bearing projections.

7. Apparatus according to Claim 6, characterised in that the swinging flap (3) is removable transversely of the bearing projections (4') from the limiting walls (2').

8. Apparatus according to one of Claims 1 to 7, characterised in that press knobs (12) are arranged on the upper side of the housing (1, 2) for the controlling of the forward and reverse running of the cutting mechanism (7).

9. Apparatus according to one of Claims 1 to 8, characterised in that a light barrier (13) is provided on the feed slot (11) in the middle of the feed table (5) for the control of the cutting mechanism (7).

10. Apparatus for destroying material in sheet form as claimed in claim 1, substantially as described herein with reference to and as illustrated by the example shown in the accompanying drawing.

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